

WHAT IS CLAIMED IS:

- 5 ~~Sub A~~ 1. A pipe running tool mountable on a rig for use in handling pipe segments and for engaging the pipe segments to a string of pipe, the pipe running tool comprising:
- 10 a top drive assembly adapted to be connected to the rig for vertical displacement of the top drive assembly relative to the rig, the top drive assembly including a drive shaft, the top drive assembly being operative to rotate the drive shaft; and
- 15 a lower pipe engagement assembly including a central passageway sized for receipt of the pipe segment, the lower pipe engagement assembly including a powered pipe engaging mechanism that is selectively driven into a pipe engagement position to forcibly yet releasably engage the pipe segment and substantially prevent relative rotation therebetween, the lower pipe engagement assembly being in communication with the drive shaft, whereby actuation of the top drive assembly causes the lower pipe engagement assembly to rotate.
- 20 2. The pipe running tool of claim 1, further including a hoist mechanism connected to the lower pipe engagement assembly and operative to hoist a pipe segment into the central passageway of the lower pipe engagement assembly.
- 25 3. The pipe running tool of claim 2, wherein the hoist mechanism comprises an axle journaled to the lower pipe engagement member, a pair of pulleys rotatably mounted to the axle, and a gear connected to the axle, whereby the gear may be coupled to a drive system for rotating the axle.
- 30 4. The pipe running tool of claim 1, wherein the lower pipe engagement assembly comprises a spider elevator.
5. The pipe running tool of claim 1, wherein the lower pipe engagement assembly is powered by one of a hydraulic system and a pneumatic system.
- 35 6. The pipe running tool of claim 5, wherein the lower pipe engagement assembly comprises a generally cylindrical housing defining a central passageway, and a plurality of slips disposed within the bowl and displaceable radially inwardly to engage a casing segment extending through the opening.

Sub A 7. The pipe running tool of claim 1, further including a block connected to the top drive assembly and adapted for engaging a plurality of cables connected to the rig.

5 8. The pipe running tool of claim 7, wherein (the drive members) NA comprise hydraulic lift cylinders.

9. A pipe running tool mountable on a rig and designed for use in handling pipe segments and for engaging pipe segments to a pipe string, the pipe running tool comprising:

10 a top drive assembly adapted to be connected to the rig, the top drive assembly including a top drive output shaft, the top drive assembly being operative to rotate the drive shaft;

a lower drive shaft coupled to the top drive output shaft and comprising an adjustable segment that is selectively adjustable to adjust the length of the second drive shaft;

15 a lower pipe engagement assembly including a central passageway sized for receipt of the pipe segment, the lower pipe engagement assembly being operative to releasably grasp the pipe segment, the lower pipe engagement assembly being connected to the second drive shaft, whereby actuation of the top drive assembly causes the lower pipe engagement assembly to rotate; and

20 means for applying a force to the second shaft to cause the length of the adjustable segment to be shortened.

10. The pipe running tool of claim 9, wherein the means for applying comprises a load compensator in the form of a pair of hydraulic cylinders.

25 11. The pipe running tool of claim 9, wherein the lower pipe engagement assembly is actuated by one of a hydraulic system and a pneumatic system.

30 12. The pipe running tool of claim 9, wherein the lower pipe engagement assembly comprises a generally cylindrical housing defining a central passage, and a plurality of slips disposed within the housing and displaceable radially inwardly to engage a casing segment extending through the passage.

Sub A  
13. The pipe running tool of claim 9, further including a block connected to the top drive assembly and adapted for engaging a plurality of cables connected to the rig to selectively raise and lower the top drive assembly.

14. A pipe running tool mountable on a rig and designed for use in connection with a top drive assembly adapted to be connected to the rig for vertical displacement of the top drive assembly relative to the rig, the top drive assembly including a drive shaft, the top drive assembly being operative to rotate the drive shaft, the pipe running tool comprising:

a lower pipe engagement assembly comprising:

a housing defining a central passageway sized for receipt of a pipe segment, the housing being coupled to the top drive assembly for rotation therewith;

a plurality of slips disposed within the housing and displaceable between disengaged and engaged positions; and

a powered system connected to the respective slips and operative to selectively drive the slips between the disengaged and engaged positions.

15. The pipe running tool of claim 14, further including a hoist mechanism connected to the lower pipe engagement assembly and operative to hoist a pipe segment into the central passageway of the lower pipe engagement assembly.

16. The pipe running tool of claim 15, wherein the hoist mechanism comprises an axle journaled to the lower pipe engagement member, a pair of pulleys rotatably mounted to the axle, and a gear connected to the axle, whereby the gear may be coupled to a drive system for rotating the axle.

17. The pipe running tool of claim 14, wherein the powered system comprises one of a hydraulic and pneumatic system.

18. The pipe running tool of claim 14, further including a block connected to the top drive assembly and adapted for engaging a plurality of cables connected to the rig.

19. In a system for assembling a pipe string comprising a top drive assembly, a lower pipe engagement assembly coupled to the top drive assembly for rotation therewith and operative

SUBA17 to releasably engage a pipe segment, and a load compensator operative to raise the lower pipe engagement assembly relative to the top drive assembly, a method for threadedly engaging a pipe segment with a pipe string, comprising the steps of:

5 actuating the lower pipe engagement assembly to releasably engage a pipe segment;

lowering the top drive assembly to bring the pipe segment into contact with the pipe string;

10 monitoring the load on the pipe string;

actuating the load compensator to raise the pipe segment a selected distance relative to the pipe string, if the load on the pipe string exceeds a predetermined threshold value; and

15 actuating the top drive assembly to rotate the pipe segment to threadedly engage the pipe segment and pipe string.

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